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TRANSMITTAL FORM

(to be used for all correspondence after initial filing)

Application Number	09/920,310
Filing Date	August 1, 2001
First Named Inventor	Nicolau
Art Unit	1626
Examiner Name	Anderson, R.L.
Total Number of Pages in This Submission: 7	Attorney Docket Number: GMX-005.01

ENCLOSURES *(check all that apply)*

- ☐ Fee Transmittal Form
  - ☐ Fee Attached
- ☐ Amendment / Reply
  - ☐ After Final
  - ☐ Affidavits/declaration(s)
- ☐ Extension of Time Request
- ☐ Express Abandonment Request
- ☐ Information Disclosure Statement
- ☐ Certified Copy of Priority Document(s)
- ☐ Response to Missing Parts/ Incomplete Application
  - ☐ Response to Missing Parts under 37 CFR 1.52 or 1.53
- ☐ Drawing(s)
- ☐ Licensing-related Papers
- ☐ Petition
- ☐ Petition to Convert to a Provisional Application
- ☐ Power of Attorney, Revocation Change of Correspondence Address
- ☐ Terminal Disclaimer
- ☐ Request for Refund
- ☐ CD, Number of CD(s) ____
- ☐ After Allowance Communication to Group
- ☐ Appeal Communication to Board of Appeals and Interferences
- ☐ Appeal Communication to Group **(Appeal Notice, Brief, Reply Brief)**
- ☐ Proprietary Information
- ☐ Status Letter
- ☒ Other Enclosure(s) *(please identify below)*:

  Response to Non-Responsive Reply (6 pages); Return postcard

Remarks

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT

Firm *or* Individual name	Michael DiVerdi
Signature	Michael J. DiVerdi
Date	June 17, 2004

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Typed or printed name	Steve Pereira		
Signature		Date	June 17, 2004

1626

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of: Nicolau, Y.C. et al. Serial No: 09/920,310 Filed: August 1, 2001 For: *Ammonium Salts Of Hemoglobin Allosteric Effectors, and Uses Thereof*	Attorney Docket No.: **GMX-005.01** Examiner: Anderson, R. L. Group Art Unit: 1626

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6.17.04
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By: _____
Steve Pereira

Response to Non-Responsive Reply

Dear Examiner Anderson:

In a Non-Responsive Reply dated May 19, 2004, it was stated that the Applicants' selected species, made in a reply dated February 25, 2004, to a restriction requirement dated January 23, 2004, does not fall within elected Group I. The Applicants respectfully traverse this contention.

It was stated that the elected group requires an aliphatic ammonium cation and that the Applicants' election of a species having cyclohexyl ammonium cations does not satisfy this requirement because aliphatic by definition means an open chain hydrocarbon and not a cyclic one. The Applicants respectfully traverse this definition of aliphatic and respectfully submit that aliphatic includes both cyclic and open chain hydrocarbons.

To support their position, the Applicants have included pages 34 and 78 from Streitwieser and Heathcock's "Introduction to Organic Chemistry," third edition, 1985, which defines aliphatic as excluding aromatic compounds, but including both cyclic and open chain hydrocarbons.

Therefore, based on what one of ordinary skill in the art would consider aliphatic, as supported by text book definitions, the Applicants respectfully submit that their elected species comprising cyclohexyl ammonium cations falls within the elected group, and that the election made on February 25, 2004, was fully responsive.

Fees

The Applicants believe no fee is due in connection with the filing of this paper. Nevertheless, the Director is hereby authorized to charge any required fee to our Deposit Account, **06-1448**.

Conclusion

The Applicants believe that they have responded fully to the Office communication dated May 19, 2004. However, if a telephone conversation with Applicant's Agent would expedite prosecution of the above-identified application, the Examiner is urged to contact the undersigned.

Respectfully submitted,
Foley Hoag LLP

By: Michael J. DiVerdi

Michael J. DiVerdi, PhD
Reg. No. 51,620
Agent for Applicants

155 Seaport Boulevard
Boston, MA 02210
Telephone: (617) 832-1000
Telecopier: (617) 832-7000

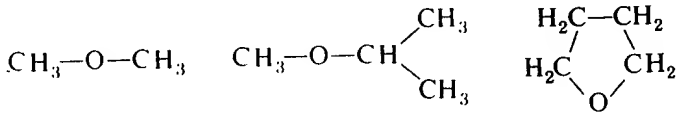
Date: June 17, 2004

INTRODUCTION *to* ORGANIC CHEMISTRY

Andrew Streitwieser, Jr.
Clayton H. Heathcock

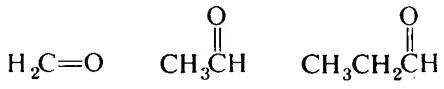
THIRD EDITION

Some Ethers

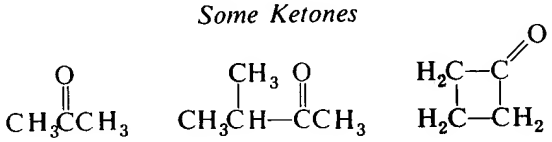


The carbon-oxygen double bond, the carbonyl group, is found in **aldehydes** and **ketones**. When the carbonyl group is bonded to an OH group, it becomes a carboxy group. Compounds containing this functional group are called **carboxylic acids**.

Some Aldehydes



Some Ketones



Some Carboxylic Acids

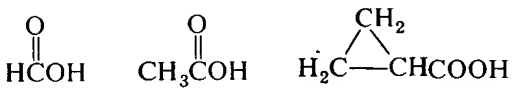


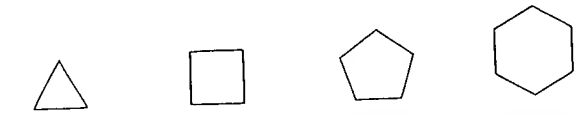
Table 3.1 lists a number of the important functional groups. The structures and names of these groups should be committed to memory. They form an essential part of the language of organic chemistry. In our subsequent studies we will develop the chemistry of the individual functional groups in terms of structural and electronic theory, nomenclature (names), physical properties, the preparation from other functional groups, and the characteristic reactions that produce other groups.

Interconversions of functional groups constitute a large proportion of organic chemistry. After the individual groups have been studied, the effect of one group on another can be considered, for the organic chemistry of compounds with more than one functional group is not simply the sum of the parts. Groups affect each other, sometimes in complex ways. One of the reasons for studying the theory of organic chemistry is that the mutual interactions of functional groups can be understood.

The aromatic ring in Table 3.1 is written with three carbon-carbon double bonds. Nevertheless, we shall see later (Chapters 20 and 22) that compounds containing this ring system differ substantially in their chemistry from the alkenes. Compounds containing this ring system are known collectively as **aromatic compounds**. Compounds with no aromatic ring are known as **aliphatic compounds**.

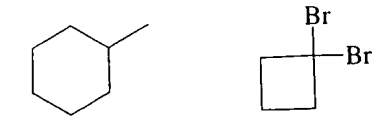
EXERCISE 3.2 Using R = ethyl, write structural and condensed formulas for one example each of an alkene, an alkyne, an alcohol, an ether, an aldehyde, a ketone, a carboxylic acid, an amine, and a nitrile.

Cycloalkanes are usually symbolized by simple geometric figures in which a carbon atom with its appropriate number of attached hydrogens is understood to be present at each apex. Thus, the four smallest cycloalkanes are depicted as

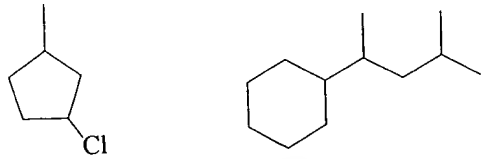


cyclopropane cyclobutane cyclopentane cyclohexane

Simple substituted cycloalkanes are depicted by the appropriate geometric figure, with attached substituent groups.



methylcyclohexane 1,1-dibromocyclobutane



1-chloro-3-methylcyclopentane 2-cyclohexyl-4-methylpentane

The alkanes and cycloalkanes are the parent structures in the general class of aliphatic compounds. Most of the chemistry of cycloalkanes is similar to that of the alkanes. There are some differences in stability and in their conformations, which will be discussed in Sections 5.6 and 7.7, respectively.

EXERCISE 5.5 Using simple geometric figures and line structures, depict the following compounds. Compare your structures with complete structural representations.
(a) 1,1,3-trimethylcyclohexane (b) 3-cyclopentylpentane
(c) 1-chloro-4-chloromethylcyclohexane (d) 1,1,2,2-tetramethylcyclopropane

5.5 Heats of Formation

The **heat of formation** of a compound from its elements in their standard states is a thermodynamic property with considerable use in organic chemistry. This quantity, symbolized ΔH_f°, is defined as the enthalpy of the reaction of elements in their standard states to form the compound. The standard state of each element is generally the most stable state of that element at 25°C and 1 atm pressure. The standard state of carbon is taken as the graphite form, whereas those of hydrogen and oxygen are H_2 and O_2 gases, respectively. By definition, ΔH_f° for an element in its standard state is zero. The standard heat of formation of butane is -30.36 ± 0.16 kcal mole^{-1} and that of 2-methylpropane is -32.41 ± 0.13 kcal mole^{-1}.

$$4\,C\ (\text{graphite}) + 5\,H_2(g) = n\text{-}C_4H_{10}(g) \qquad \Delta H^\circ \equiv \Delta H_f^\circ(n\text{-}C_4H_{10}) = -30.36 \text{ kcal mole}^{-1}$$

$$4\,C\ (\text{graphite}) + 5\,H_2(g) = (CH_3)_3CH(g) \qquad \Delta H^\circ \equiv \Delta H_f^\circ(i\text{-}C_4H_{10}) = -32.41 \text{ kcal mole}^{-1}$$